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Mapping maternity care facilities in England

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Abstract

Objective. To describe the organisation of maternity care at trust and unit level in England.

Methods. All NHS trusts providing maternity care participated in a survey as part of the Healthcare Commission review of maternity care in England in 2007. Data on trusts and numbers of units were also collected in 2009 as part of the Birthplace in England programme.

Results. Models of care provision are limited: in 2007 two-thirds of trusts provided choice between home birth and birth in an obstetric unit only. Geographical variation is substantial, with approximately 70% of trusts in the North-West, Yorkshire and Humberside and London Strategic Health Authority regions having only obstetric units, compared with 50% or less in the South-West and East Midlands. Availability and proximity of specialist facilities for women and babies within trusts varies and is linked with obstetric units. Changes in trust configuration, identified in 2009, have largely resulted from opening alongside midwifery units, then available in a quarter of trusts. Freestanding midwifery units continue to provide care for small numbers of women, commonly in more rural areas.

Conclusions. In 2007, 66% of trusts had no midwifery-led units and this is likely to have limited the choices that women were able to make about their planned place of birth and the possibility of having midwife-led care in non-obstetric unit settings. Recent data suggest that women's options for care may have increased, although capacity and staffing issues, reflected in closures to admissions, may affect these.

Key words: Maternity units, service configuration, evidence-based midwifery

Introduction

Maternity services in the NHS in England provide comprehensive care for almost all pregnant women. The physical configuration of services at any one time, both locally and nationally, is likely to be a consequence of history, funding, policy and local implementation, as well as the needs of the local population. Some of the drivers for local configuration include geography and transport, trends in birth rates, as well as the provision and location of obstetric theatres, neonatal care facilities and adult intensive care.

The maternity standard of the National Service Framework (NSF) for children, young people and maternity services set out the need for flexible and individualised services that are woman and family centred (Department of Health (DH), 2004). The importance of women being able to make choices about their maternity care has been emphasised in strategy documents (DH, 2007; Chief Nursing Officers of England, Northern Ireland, Scotland and Wales, 2010). It was envisaged that in the future, all women and their partners would be able to choose where and how to give birth, while at the same time being supported in having as normal a pregnancy and birth as possible. The national choice guarantee was that by 2009: 'Depending on their circumstances, women and their partners will be able to choose where they wish to give birth' (DH, 2007: 5). The options for place of birth given, in addition to obstetric units in which birth is supported by a maternity team, were 'birth supported by a midwife at home' and 'birth supported by a midwife in a local midwifery facility such as a designated local midwifery unit or birth centre.' (DH, 2007: 5).

The teams providing care in hospital based obstetric units include midwives, obstetricians, paediatricians and anaesthetists.

Providers and commissioners are expected to facilitate improvements in maternity services that support high-quality care and to monitor changes as they occur. Changes in both the population of childbearing women and in their birth rates continue to impact on maternity services and the organisations and individuals providing care. These include the number of women giving birth in NHS hospitals in England increasing from 544,468 in 2002 to 642,624 in 2008, while numbers of births at home in England rose from 12,055 to 18,933 over the same period (Office for National Statistics (ONS), 2004; 2009a; 2009b). After standardising to take account of the changing structure of the population, the mean age at first birth in England and Wales increased from 26.3 years in 1998 to 27.5 in 2008. The numbers of maternities to women aged 35 to 39 rose from 89,009 in 2002 to 114,099 in 2008, while the numbers to women aged 40 and over rose from 17,108 to 25,902 over the same period. In 2008, 25% of live births in England were born to women who themselves were born outside the UK, compared to 18% in 2002 (ONS, 2009).

The requirement to comply with the European Working Time Directive has particularly affected medical cover and availability and led to organisational change, which has included some centralisation of medical services into larger units, especially those linked with neonatal units (NHS Confederation, 2004; Royal College of Paediatrics and Child Health and RCOG, 2009). While there is evidence about variation

Box 1. Unit definitions used in maternity care review

Obstetric unit (OU)	An NHS clinical location in which care is provided by a team, with obstetricians taking primary professional responsibility for women at high risk of complications during labour and birth. Midwives offer care to all women in an OU, whether or not they are considered at high or low risk, and take primary responsibility for women with straightforward pregnancies during labour and birth. Diagnostic and treatment medical services, including obstetric, neonatal and anaesthetic care are available on site.
Alongside midwifery unit (AMU)	An NHS clinical location offering care to women with straightforward pregnancies during labour and birth, in which midwives take primary professional responsibility for care. During labour and birth the full range of diagnostic and treatment medical services, including obstetric, neonatal and anaesthetic care are available, should they be needed, in the same building, or in a separate building on the same site. Transfer will normally be by trolley, bed or wheelchair.
Freestanding midwifery unit (FMU)	An NHS clinical location offering care to women with straightforward pregnancies during labour and birth in which midwives take primary professional responsibility for care. GPs may also be involved in care. During labour and birth, diagnostic and treatment medical services, including obstetric, neonatal and anaesthetic care, are not immediately available but are located on a separate site should they be needed. Transfer will normally involve car or ambulance.

between trusts (Audit Commission, 1997; Healthcare Commission, 2008) and in women's experiences of care (Garcia et al, 1998; Redshaw et al, 2007), the overall physical configuration of maternity services in England and its implications for women's choice has been less well documented. From the late 1940s to 1986, basic data were collected about the location of maternity units, the numbers of beds provided for consultant and GP-led maternity care and the numbers of births in these facilities, in the SH3 Hospital Return.

Since this was discontinued, data collection has not regularly or systematically documented capacity, throughput and changes to the geographical distribution of maternity units on a national basis. This study reports findings from one component of the Birthplace in England research programme, the aims of which were to obtain an overview of the configuration of maternity services and to describe the organisational geography of the care and services available, focusing particularly on intrapartum care.

Methods

Data collection

Collection of data about the configuration of maternity care in England was carried out during 2007 as part of a maternity service review by the Healthcare Commission, now part of the Care Quality Commission (Healthcare Commission, 2008). All 148 acute trusts providing obstetric services and a further four trusts providing midwifery-led services were required to complete an online questionnaire. Nominated leads within each trust were responsible for data return and the data were returned in October 2007. Data on trusts, maternity unit numbers and changes in classification were also directly collected by the Birthplace project team during 2008 to 2009, in order to identify all functioning maternity

Table 1. Configuration of maternity care within trusts in England in 2007

Trust configuration	Trusts n (%)
One or more obstetric unit (OU) only	100 (65.8)
One or more OUs and one or more AMUs	20 (13.2)
One or more OUs and one or more FMUs	23 (15.1)
One or more of all types of unit (OU, AMU and FMU)	5 (3.3)
One or more FMUs only	4 (2.6)
Total	152 (100.0)

Source: Maternity Service Review HCC/NPEU questionnaire (2007)

units and any changes in configuration within trusts. Organisational, policy and aggregated statistical data were returned on a trust and unit basis. No individual data were requested and thus ethical approval was not sought for the survey.

Survey instrument

The Birthplace Mapping Component Working Group and the Maternity Review Team at the Healthcare Commission together developed the survey instrument to be used with trusts and a formal agreement was made for data to be shared between the Commission and the National Perinatal Epidemiology Unit. The topics covered included details about a wide range of policies

Figure 1. Location of freestanding midwifery units, alongside midwifery units and obstetric units in England

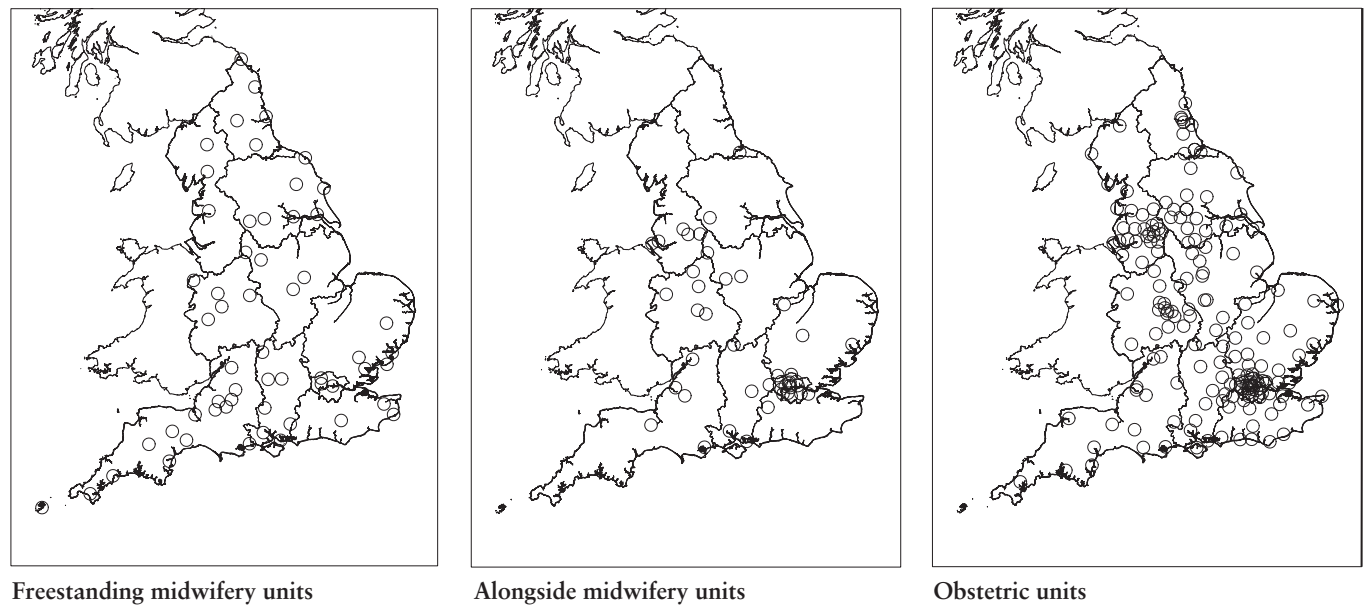


Table 2. Different types of maternity units with the numbers of women giving birth in England 2006/7 by type of maternity unit

Type of unit	Number of women giving birth					
	Under 1000	1000-2499	2500-3999	4000-5499	5500-6999	7000 and over
Obstetric unit	1	51	81	39	7	1
Alongside midwifery unit	21	4	1	0	0	0
Freestanding midwifery unit	56	0	0	0	0	0
Total	78	55	82	39	7	1

Source: Maternity Service Review HCC/NPEU questionnaire (2007)

and services associated with staffing, facilities, and the organisation of antenatal, intrapartum and postnatal care. Both trust level data and unit data were collected, and where trusts had more than one maternity unit, the data were entered separately. A survey administration manual was provided with guidance and definitions. This included descriptions of the different types of unit. Individual units were identified and categorised based on the definitions developed by the Birthplace Programme as obstetric units (OUs), alongside midwifery units (AMUs) and freestanding midwifery units (FMUs) (see Box 1). Only units able to provide information about the care they provided and their own birth statistics were treated

as separate units for the purposes of the study.

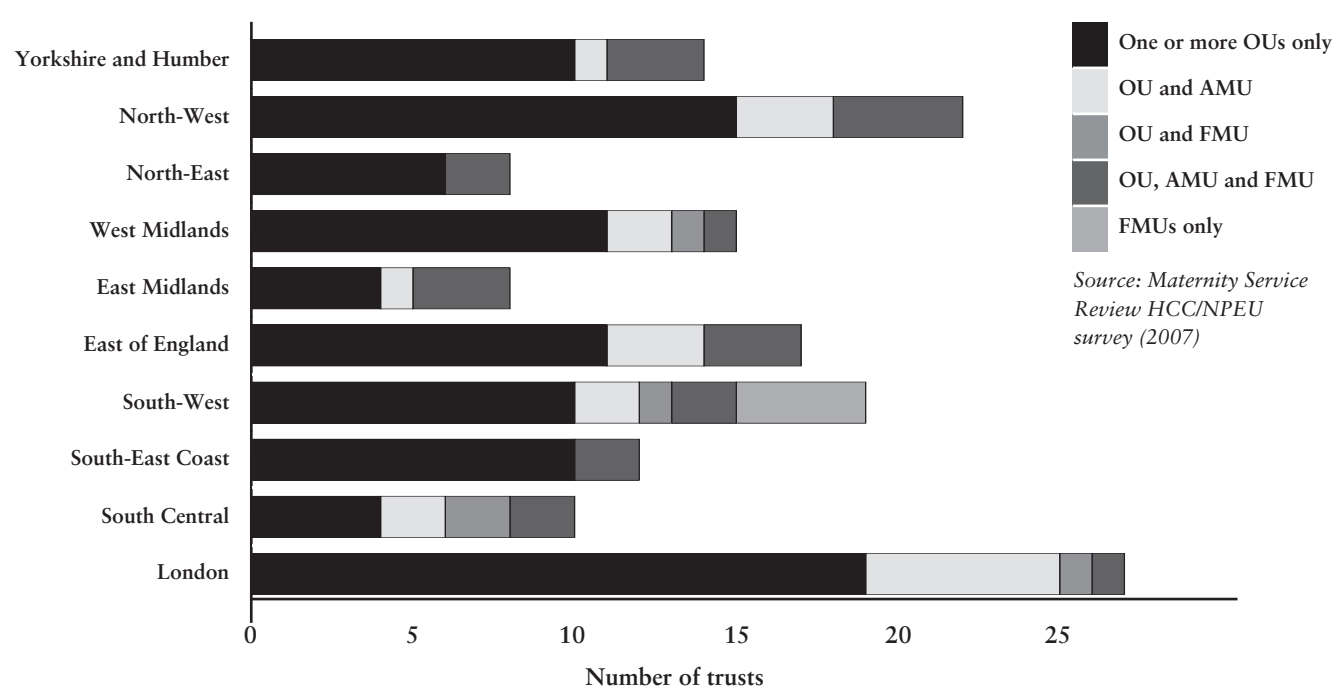
Analysis

The data entered were loaded into an MS Access database and data checks and analyses carried out using STATA 10.1 SE and SPSS 15.0. Frequencies and proportions were calculated. The location information was used for geographical mapping with a geographical information system (GIS).

Results

A total of 148 acute trusts providing a full range of maternity care and a further four trusts providing only midwifery-led services returned data. All of these

Figure 2. Regional variation in trust configuration of maternity care (number of trusts) in SHA regions in England in 2007



Source: Maternity Service Review HCC/NPEU survey (2007)

Table 3. Facilities and services associated with each type of maternity unit

Facility or service	Maternity unit type (n %)			Total units (n=262)
	OU (n=56)	AMU (n=26)	FMU (n=180)	
Pregnancy day assessment unit	171 (95.0)	20 (76.9)	16 (28.6)	207 (79.0)
Early labour assessment by a midwife at home	84 (46.7)	15 (57.7)	36 (64.3)	135 (51.5)
24/7 epidural service	169 (93.9)	6 (23.1)	0 (0.0)	175 (66.8)
1 or > obstetric high dependency unit beds	88 (48.9)	0 (0.0)	0 (0.0)	89 (34.0)
Adult intensive care unit on site	167 (92.8)	20 (76.9)	6 (10.7)	193 (73.7)
Dedicated obstetric theatres	178 (98.9)	n/a	n/a	178 (67.9)
Blood transfusion service on site	172 (95.6)	24 (92.3)	6 (10.7)	202 (77.1)
Neonatal unit on site	178 (98.9)	26 (100.0)	0 (0.0)	204 (77.9)

Source: *Maternity Service Review HCC/NPEU questionnaire (2007)*

were included in the analyses. This reflects an almost complete picture of all the trusts and units providing maternity care in England. Data were not available from one trust that had merged with a larger trust just prior to data collection. Within the trusts, data were provided by a total of 262 maternity units made up of 180 OUs, 26 AMUs and 56 FMUs. AMUs unable to provide their own birth statistics separately from those of the OU at the time of the review were not included as distinct entities.

Configuration of services

The basic configuration of maternity services within trusts falls into five categories (see Table 1). In 2007, two-thirds of trusts (66%) had only one or more OUs delivering maternity services and 84 of these 100 trusts had a single OU. Only 17% of trusts had hospital-based AMUs and only 15% had a combination of OUs and FMUs. Even fewer trusts – 3% – had all three types of unit. Marked differences in the availability of midwifery-led services can be seen within the geographical areas in England covered by individual strategic health authorities (SHAs) and patterns can be seen (see Figure 1). Trusts with FMUs were more common in the South-West and trusts with AMUs were more likely in London, the North-West and the East of England.

Maternity care in an obstetric unit was by far the most

common form of provision with more than two-thirds (69%) of the maternity units at this time being OUs, caring for more than 95% of the women giving birth in England in the financial year ending 31 March 2007. AMUs and OUs varied considerably in the numbers of women giving birth (see Table 2), with over a quarter of OUs (29%) having fewer than 2500 women giving birth and a similar proportion (26%) having more than 4,000 women giving birth. Using throughput as a marker, midwifery-led units, both alongside and freestanding are small compared with OUs. The distribution of types of unit also varies considerably between geographical areas (SHA regions), following the pattern of trusts (see Figure 2).

Home birth is one of the choices available, but the proportion of women reported to have given birth at home in England as a whole was relatively small, 2.8% in both 2007 and 2008 (ONS, 2008; 2009b). However, there were marked differences between trusts, for among the 138 trusts reporting on women whose births were planned and completed at home in the year ending 31 March 2007, the numbers ranged from 0 to 368 per trust, with a median of 61. Planned birth at home was more common in trusts with OUs and at least one FMU (mean 131 births, median 124) and in trusts with all three types of unit (mean 142 births, median 142), compared with trusts with OUs only (mean 70 births, median 53).

Closures

Data were collected on the extent to which units were operational and the days that they were closed to admissions during the year ending 31 March 2007. A small number of units, nine OUs, three AMUs and nine FMUs, reported not being operational during this year, for variable time periods ranging from 12 to 52 weeks. Most maternity units (62%) were not closed at any time, but 39% of OUs, 35% of AMUs and 32% of FMUs did report being closed for a median of four days, 12 days and 30 days respectively, largely as a function of capacity and staffing issues.

Facilities and services

The associated facilities and services varied by type of maternity unit (see Table 3). Pregnancy day assessment units were most commonly associated with obstetric units whereas early labour assessment at home was reported as available by half of all maternity units, most commonly those that were midwife-led. The 24-hour epidural services followed a similar pattern, with almost all OUs (94%) reporting this type of service. Almost all OUs had at least one dedicated obstetric theatre, access to an intensive care unit and a blood transfusion service on site, though only half had one or more high dependency obstetric beds.

It may be that during labour some women and their babies need to be transferred to other units for more specialist services. For FMUs, the nearest OU was a median distance of 17 miles away (mean 18.6), but this distance ranged from five to 70 miles. Several units in one trust were unable to identify the main unit to which women were likely to be transferred, indicating that it depended on different units' available capacity on the day. The median distance from an FMU to the nearest neonatal unit providing high dependency neonatal care was 17 miles (mean 17.5), with a range from five to 54 miles. However, the distance to a neonatal unit able to provide the full range of neonatal intensive care may be greater than this. Seven FMUs in two trusts in rural areas indicated that air transport was used for some transfers.

Planned and reported changes

All participating trusts provided information about recent and planned future changes in provision. Changes in maternity services were planned in trusts with all types of configuration for the three years following the maternity review. Some planned to increase capacity and options for care by opening new units, with 13% planning a new OU, 17% a new AMU and 13% a new FMU. Higher proportions planned to make changes across the board, with 30% increasing delivery bed capacity in maternity care, 48% increasing obstetric medical cover, 45% increasing consultant posts and 54% increasing the funded midwifery establishment.

Recent figures on the numbers of maternity units returned by heads of midwifery suggest some of these changes have now taken place. Between October 2007

and September 2009, three trusts were reported to have merged and one OU closed. There has been an increase in the number of AMUs, and while six FMUs had closed, three had opened. By 30 September 2009, a total of 179 of the 287 maternity units identified were OUs (62%), 51 were AMUs (18%) and 57 were FMUs (20%). Of the 24 'new' AMUs, six were already functioning in this way in 2007 but were unable to disaggregate their data and so were not identified as such. In terms of configuration within trusts the situation at the end of 2009 was one in which fewer trusts had only OUs (52%), more had OUs with AMUs (24%), and there was little difference in the proportion of trusts with OUs and FMUs (17%), those with all types of unit (5%) and those with just FMUs (3%).

Discussion

In terms of places for birth provided by the NHS, care provision and choice, were limited, with most women giving birth in an obstetric unit in which a team of midwives and obstetricians provided care for low- and high-risk women as required. The number of trusts with midwifery-led units was relatively small and there was geographical variation in the extent to which these were available. Specialist facilities for women and their babies are usually linked with obstetric units and proximity to these varied accordingly. Changes in trust configuration since the survey took place suggest that by September 2009, women's options may have increased, resulting from the higher number of AMUs that had become available in a quarter of trusts. FMUs continued to provide care for a relatively small number of women, commonly in more rural areas. While home births were at a low level, 58% of women responding to women's surveys in the same trusts, reported being offered birth at home as an option (Healthcare Commission, 2008). Using national statistics as a data source on numbers of women giving birth and focusing only on the location of maternity units, rather than the configuration within trusts, the distribution of UK maternity units and home births was described in a recent report, which supports the findings reported here (Dodwell and Gibson, 2009).

Changing demographics and national and local policy are major influences on the configuration and provision of care. The current policy agenda, with its focus on choice for women and their families, is a driver for the kind of changes taking place. At the same time, the European Working Time Directive (RCPCH and RCOG, 2009) has impacted on staffing arrangements and cover that may in turn affect women's possible choices. Differences in configurations of maternity provision are also likely to reflect a range of historical and contemporary factors including geography, local champions and innovators, and user group activity.

The present distribution and configuration of care suggests that, over time, trusts have adopted different strategies. Some have moved towards having midwifery-

led units alongside consultant-led units, while others have provided midwifery-led care separately. In some cases, these reflect past provision of 'GP units', in which women booked with a GP for care provided largely by midwives (Smith and Smith, 2005). Other arrangements include FMUs that are closed unless required by a woman in labour (Lewis and Langley, 2007). The shift from a model of commissioning maternity services with 'block maternity contracts' with acute trusts, to contracting a maternity service for a local population within a managed clinical network may mean that commissioners of these services may have more options and greater flexibility in contracting for maternity services. Based on needs assessments of the local maternity population, commissioners can contract services from more than one provider, for the whole or part of the care pathway. While this may improve the quality of services, it also makes for more complexity in monitoring the effects of changes in configuration and provision. Cross-boundary movement of women for different phases of care similarly increases the uncertainties associated with planning and providing maternity services.

Planning individual women's care necessarily involves taking into account accessibility and proximity to any specialist services that may be required, in addition to their reproductive history and health. The characteristics and needs of the local population more generally, and the way in which maternity care has been provided have historically influenced the way that maternity care is configured at present. The changing birth rate and inward migration have affected some services markedly,

particularly those in the south and in London.

With the birth rate increasing by 2% per year in the capital, which also has the highest regional vacancy rate for midwives (Healthcare Commission, 2008), capacity issues are a considerable challenge, as is the cultural and social diversity of the population evidenced in the broad range of ethnicity and languages used. The numbers of units of all kinds within a region reflect the number of births, with London and the north-east at the extremes (ONS, 2009a).

Conclusion

In 2007, 66% of trusts had no midwifery-led units and this is likely to have limited the choices that women were able to make about their planned place of birth and the possibility of having midwife-led care in non-obstetric-unit settings. Data from the end of 2009 suggest that women's options for care may have increased, although capacity and staffing issues, reflected in closures to admissions, may affect these.

Undertaking the survey was a challenge, especially in collecting data from trusts whose information systems were ill-equipped to access or supply them. Routine collection of basic data of the kind collected in the survey could enable monitoring of changes in configuration over time and monitoring of the effects of these changes. The data presented provide an overview of how care is provided, a context for the development of perinatal or maternity networks and a baseline against which to compare future configuration, developments and organisational change, both locally and in England as a whole.

References

- Audit Commission. (1997) *First-class delivery: improving maternity services – England and Wales*. Audit Commission: London.
- Chief nursing officers of England, Northern Ireland, Scotland and Wales. (2010) *Midwifery 2020: delivering expectations*. HMSO: London.
- Department of Health. (2004) *National Service Framework for children, young people and maternity services: maternity standard 11*. HMSO: London.
- Department of Health. (2007) *Maternity matters: choice, access and continuity of care in a safe service*. HMSO: London.
- Dodwell M, Gibson R. (2009) *Choice of place of birth*. NCT: London.
- Garcia J, Redshaw M, Fitzsimons B, Keene J. (1998) *First-class delivery: a national survey of women's views of maternity care*. Audit Commission: London.
- Healthcare Commission. (2008) *Towards better births: a review of maternity services in England*. Commission for Healthcare Audit and Inspection: London.
- Lewis M, Langley C. (2007) I'm giving birth up the hill: will you come? *Midwives* 10: 428-9.
- NHS Confederation. (2004) *Survey of models of maternity care: towards sustainable WTD compliant staffing and clinical network solutions*. NHS Confederation: London. See: www.rcog.org.uk/files/rcog-corp/uploaded-files/survey_of_models_maternity_care.pdf (accessed 3 June 2011).
- Office for National Statistics. (2004) *Birth statistics: review of the registrar general on births and patterns of family building in England and Wales, 2002. Series FM1 no 31*. HMSO: London.
- Office for National Statistics. (2009a) Report: births in England and Wales, 2008. *Population Trends* 138: 85-9.
- Office for National Statistics. (2009b) *Birth statistics: review of the registrar general on births and patterns of family building in England and Wales, 2008. Series FM1 no 37*. HMSO: London.
- Redshaw M, Rowe R, Hockley C, Brocklehurst P. (2007) *Recorded delivery: a national survey of women's experience of maternity care 2006*. National Perinatal Epidemiology Unit: Oxford.
- Royal College of Paediatrics and Child Health, RCOG. (2009) *Children's and maternity services in 2009: working time solutions*. Royal College of Paediatrics and Child Health and RCOG: London.
- Smith LFP, Smith CP. (2005) UK childbirth delivery options in 2001-2002: alternatives to consultant unit booking and delivery. *British Journal of General Practice* 55(513): 292-7.